# The Green Team - 885

## Team Organization and Governance - 2013

This paper outlines the organization and governance for the Green Team for the 2013 build season. All student team members, parents, and adult mentors should be familiar with this document.

## Basic Team Organization

The team will be organized into "squads" oriented to specific tasks or subassemblies on the bot. The missions for the squads will depend on the requirements for this year's game, but the following squads will be required most likely:

- Chassis and Drive Train,
- Software and Programming,
- Electrical and Wiring,
- T-shirts and Event Coordination,
- Crate and Shipping (at the end of the build season)
- Playing Field (middle of build season)
- Special squads, (depends on the game - see below)

Last year we needed special squads for the "lifter," "bridge tool," electronics, chassis, bumpers, and the "shooter." This year's game will require different special squads, but we will certainly need some and they will be very important.

Each squad will have an adult squad leader and hopefully a student squad leader. Meeting this goal depends on our membership. Generally squad leaders will be people who have shown a steady interest in the team or are otherwise qualified by knowledge or experience. Squad leaders will have to agree to attend **most** of the work sessions throughout the build season.

**Team members will be assigned to a particular squad or squads; this is very important.** We hope to allow people choose their squad based on their interests. People will normally be on more than one squad.

People should plan to work with their assigned squad for some time. However, if people want to be on a different squad after a while, or if one squad gets finished with its work, then people can move to a different squad. The Engineering Coordinators will keep track of squad membership and will manage assignments.

What will **not** be acceptable is for people to hop from one squad to another on impulse. That is the enemy of thoughtful problem solving and continuity of effort. Stable squads will help us develop well thought-out solutions.

Newcomers to a squad are welcome but they must respect the previous efforts of their squad. Newcomers may of course make suggestions, but should not demand that the squad reverse several weeks of effort because of their new idea. Squads should not have to review weeks of decision

making for the benefit of newcomers. Occasional participants should not expect to have the same decision making authority as regular attendees.

People who do not want to be on specific squads or who cannot attend regularly will be assigned to make parts, assembly, safety implementation, or other general tasks. People not on a squad will have less input on decisions than regular squad members. There may be roving adult mentors, but they must respect the on-going work and direction of the squads in offering their suggestions.

Squads will have a good deal of autonomy around their assigned task. For instance, the Chassis and Drive squad will have a pretty free hand to design their assembly within the overall configuration and weight budget of the agreed-on-design.

## Decision Making

Major decisions are reached a regular meeting which occurs after lunch on Saturdays, open to all team members. Different squads present their ideas, invite comments, and a decision on how to proceed is usually reached by consensus, or sometimes by a show of hands.

The squad leaders will form a "Council" which will be the forum for making decisions for matters that cannot be resolved in the regular weekly team meeting. Conflicts of some kind will be inevitable as the design develops and problems are encountered. For instance, if one squad is unable to design an assembly within a predicted weight limit, the Council will try to determine how the problem is to be resolved - relax some requirements, "borrow" weight from another assembly, keep working on it, or whatever. The Council will consider the interests and requirements of **all** squads and make decisions to best benefit the entire team.

If necessary, a "Supreme Court" consisting of senior adult mentors will decide matters that the Council is unable to resolve.

We call on all participants, especially the squad leaders, mentors, and parents to adhere to and support the decision making process.

## The Agreed-on Design

Very early in the process there must be an "agreed-on-design." This is the design that all squads are cooperating to make at any given moment.

In the beginning this design will be very conceptual without much detail. The first agreed-on-design will probably just be some hand sketches that arise from initial brain-storming sessions. The design will become more detailed and specific as work is done. It will also change over time.

The senior adult mentors will determine what constitutes the agreed-on-design at any given moment based on the apparent will of the weekly meeting. It will include as a minimum:

- A conceptual idea of how the bot will perform the tasks required to play the game. (This has to be based on an overall strategy for the game.)
- An identification of the principal subassemblies comprising the bot. (These will generally be the basis of forming the squads.)
- A rough idea of the physical location on the bot of the principal subassemblies.

- A "weight budget" for the various subassemblies.

The current agreed-on design will be available in a notebook or on a bulletin board. All squads are expected to use the agreed-on-design as a reference for their work.

If a squad finds that its design deviating from the agreed design in a way that will affect the work of other squads, it must seek guidance from the Council. **This is very important.**

## Design Process and Design Tools

Hopefully design efforts within a squad will be the result of collaboration between all interested squad members. Decisions within a squad should be by consensus if possible. If this is not possible the squad leaders should ask for a vote. As a last resort, or when a quorum of the squad is not present, the squad leaders have the right to make decisions for the squad. The emphasis will **always** be on teamwork, not individual action.

The first design efforts will be brainstorming. Team members will be encouraged to advance ideas on how to solve the problem by working in small temporary groups. At several points there will be a general "show and tell" where different ideas can be presented, usually by a spokesman for the working group. The design tools for this initial effort will generally be pencil and paper, cardboard, wood, although it may be possible to use computer drawing tools for some elements, even at the beginning.

As squads are assigned and begin to meet, the concepts will become more definite and the drawing tools more precise. We have the use of Sketch-up, AutoCAD, Solidworks, and Inventor to help with modeling; paper/pencil, cardboard, and wood will continue to play a role. It is not always necessary to use the same modeling tool for each part of the machine.

The overall goal is to **first** generate designs, **then** generate exact part drawings, **then** make parts. Trial and error part making will be discouraged.

The dream solution would be to draw up every part of the bot using Solidworks or Inventor within the first two weeks. However, it is unlikely that we will be able to achieve this goal. Solidworks and Inventor are difficult tools, and only a few team members know how to use them. There will be too many decisions for two or three people to make alone. Of necessity some variety of design tools will be used, including pencil and paper. Last year we also used cardboard and wood mockups very effectively.

Often we build a functioning "mule" to test concepts. A mule is a bot that has functionality but may not be very pretty.

We hope and expect to have a functioning chassis after the first two weeks. This chassis will be loaded to the full competition weight and tested extensively to find and eliminate problems.

## Parts Control, Supplies, Tools

Storage of materials will be in our designated area at the "Catamount" facility.

When we get the kit of parts from FIRST, a small squad will have the responsibility of unpacking it, labeling the parts, making an inventory, and putting the components in storage. **Free-for-all unpacking of the kit will not occur.**

It may be important to keep this year's parts separate from whatever other things we have accumulated over the years. This is because we are **required** to use parts from **this year's kit** in many cases, and parts do not always match from year to year. However, past year parts may be useful in testing, making prototypes, and so on.

## The Drive Team and Other Special Teams

The Engineering Coordinators will determine the Drive Team, and in doing so will seek the advice of key students and other adult mentors. A history of regular participation will be a requirement but will not alone be sufficient. Other factors will include: positive contribution to the decision making process, proper working within the system of squads, familiarity with the bot itself, carrying out assigned tasks, cooperating with other team members, ability to actually drive, long-term involvement with the team, and making a positive contribution generally.

There will also be other "special teams" needed at VTC and at the event in Manchester; these include "Scouting," "Safety," "Pit Management," and possibly others. Being on these teams is an honor comparable to being on the Drive Team, and members will be chosen a similar way.

To be considered for any of the special teams students must complete the required registration with FIRST and pay any required fees, on or before February 1.

## Work Sessions

Generally we will work on Friday evenings, all day Saturdays, and Sunday afternoons. Exact times will be announced.

It **is not** expected that every team member attend every session. What is important is that you let your squad leader and the Engineering Coordinators know of your expected attendance, and you keep your commitments. Squad leaders and other key team members are expected to attend **most** sessions. There will be several jobs available for team members who are able to attend less often. What really counts is predictability.

It will not be possible for every team member to be busy and productive every moment. We try to plan the work so that as many people as possible can be useful at every moment, but there will be delays, missing materials, unexpected glitches. Please accept this, and try to use any "down time" to better understand the rules, help others, observe what experienced team members are doing, etc.

## Sign-in Sheet

Again this year there will be a sign-in sheet for all participants - students, parents, adult mentors. There will be a notebook with pages for each date. Sign in with your name, time in, time out, and any comments. This is especially important for students who are getting academic credit for being on the team.

## Safety Programs

Safety must be a major concern of all participants. Having a good safety program is a condition of the use of the space at VTC; any serious violation of the program will jeopardize our right to use the facilities. This is a matter that VTC takes **very** seriously.

Parents must be in agreement with all safety requirements for themselves and for their child.

All team members must participate in the safety training before they are allowed to use the machine tools. All members must read and understand the safety training documents (*Workshop Rules - Team 885* and *Basic Machine Shop Safety, Team 885*). **This is very important.**

VTC is requiring special rules for the use of the machine tools. Students 13 years old and under are not allowed to actually run the machine tools. Students age 14 and 15 who have completed the safety training may use the machine tools under the **direct** supervision of an adult mentor. Students age 16 and over who have completed the safety training may use the machine tools if an adult is in the work area. However it is important to note that a student who is not qualified to operate the machine can still assist with set-up, fitting tools, measurements, clamping the part, and so on. She /he just can't operate the machine under power.

No one will be allowed in the work area who is not on the team list and has signed the liability release. No more than 10 people will be allowed in the vicinity of the machine tools at any one time, but we will take steps to make sure everyone qualified has a chance to work with the machine tools.

All participants must abide by safety rules or they will lose shop privileges. If any one has acted in an unsafe manner, has been rude, or has otherwise acted inappropriately they will be asked to leave for the day. If this happens a second time, all shop privileges may be revoked.

There will be absolutely no horseplay in the work area. Participants are not allowed in the shop without a specific purpose; gossip, small talk, visiting must occur elsewhere. The shop is also not the place for animated discussions about the robot design, the Super Bowl, or anything else.

Any participant who damages a machine by not following rules or instructions will be responsible for repairs. If you have caused some damage to a machine **please tell a responsible adult about it**.

We are individually and collectively responsible for leaving all work areas neat and clean at the end of a session. Unlike previous years, we can leave some of our work set up when we are finished on Sunday. If we have "spread out" over the weekend we need to bring our work furniture back within our designated area before we leave on Sunday.

Here are some of the more important provisions of the Safety Training Document; all team members are responsible for reading and understanding the **entire** document.

- No one, adult or student, may use the machine tools (lathe, mill, drill press, etc.) unless he/she has been trained.
- Keep away from the machine tools unless you are actually using them to make parts.
- Safety glasses meeting ANSI Z87.1 standards must be worn at all times in the work area by everyone. They are not required for the classroom or at a safe distance from the work area. Ear plugs for use in the shop are also suggested.

- In the vicinity of machinery or power tools, long hair must be secured. No loose clothing, jewelry, neckties, or other items that could be caught by the machines. No open toed shoes allowed in the work area.
- Welding in not permitted; if welding is necessary we will make special arrangements.
- Stored energy is dangerous. Before working on the robot, disconnect the main battery, relieve pressure from pneumatic systems, and release any springs that could activate suddenly.
- Food is not allowed in the work area. No alcohol is allowed, anywhere.

There will be additional safety requirements, established by FIRST, which apply to the competition site itself.

## Releases, Forms, and Permissions, Other Paperwork

FIRST requires all team members to be registered. On-line registration is preferred.

FIRST, VTC, and Team 885 all require participants to sign releases. For participants under the age of 18, the releases must be signed by a parent or legal guardian.

- FIRST requires all participants to sign a release before participating in the regional event.
- VTC requires a release of liability before participants may use VTC facilities. This release will also cover Team 885 and its participants.
- We also have a personal information form. Please list your name, address, e-mail, phone, and other contact information.
- Student members are required to register with FIRST using the "STIMS" system. Information will be provided.

## Communications

Communication with all team members and parents is by Googlegroups. There are no mailed notices. Please make sure we have e-mail addresses for everyone in our records.

If we send out a notice that asks for a response **please respond** one way or the other. A "no, we can't make it" is just as important as "yes, we can.."

If you want to ask a question off-topic make a new thread; it is confusing for everyone to jump from topic to topic within the same thread.

Please reply appropriately; please do not automatically hit "reply" to reply to a message because the message goes to everyone. Get the e-mail addresses for key members of your squad. Some other key e-mail addresses include:

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|---|---|
| Suzy, Charlie Zani | zanivt@gmail.com (general notices, attendance, schedule) |
| Jon Boette | jboette@gmail.com |
| Jim Wick | jimwick.vt@gmail.com |
| Paul Feeney | Paul.Feeney@state.vt.us |